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MILITARY AFFAIRS

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USSR REPORT  
MILITARY AFFAIRS

No. 1589

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MOSCOW SARUBENNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 1-2

[Full-text translated articles published in this issue of the JPRS report are indicated with an asterisk (\*); excerpted translations with a double asterisk (\*\*).]

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## PERCEPTIONS, VIEWS, COMMENTS

### U.S. ARMED FORCES ORGANIZATION

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 7-14

[Article by Candidate of Military Sciences, Associate Professor, Colonel N. Bystrov]

[Excerpts] Militaristic circles in the USA believe military power, represented mainly by armed forces, to be the principal means of achieving their aggressive goals and implementing their plans of achieving world domination. Thus former Defense Secretary Rumsfeld openly declared that "military power and its evaluation in political circles continue to be the dominant factor in international disputes, and the main determinant of our possibilities for achieving the aims of American foreign policy." The former Carter administration adhered to these viewpoints as well.

The cutting edge of American foreign policy is aimed mainly against the Soviet Union and other countries of the socialist fraternity. It is no accident that the American manuals note that combat activities in Central Europe against Warsaw Pact states is the most important mission of the U.S. Armed Forces. The United States no longer believes China to be its probable enemy, inasmuch as the Beijing leadership is now in the same harness with imperialism and the most brazen reaction.

Present development of the U.S. Armed Forces is based on the strategy of so-called "realistic deterrence". It reflects the position of using force against other states as one of the most important resources of American foreign policy.

Further growth of the military power of the USA and its allies has been declared to be the priority aim of the Washington administration for the 1980's. Extensive military preparations are being made in all branches of the armed forces and in all categories of arms. The main emphasis continues to be laid on strengthening the nuclear missile forces, both strategic and operational-tactical.

The armed forces of the United States are developing in accordance with their traditional subdivision into branches, while since 1962 this development has also been proceeding in relation to the missions of certain groups of forces--strategic forces, general-purpose forces, strategic troop airlift forces, and reserve components. Strategic forces are intended mainly for strategic nuclear war, while general-purpose forces are intended for other forms of war.

In accordance with the National Security Act of 1947, the U.S. Armed Forces consist of three branches: ground troops (the army), the air force, and the navy. Each branch contains regular troops and reserve components.

Regular troops are the backbone of the armed forces. These are career troops outfitted with the latest weapons and military equipment, they are well trained, and they are in constant readiness for combat activities.

Reserve components include the reserves of the branches of armed forces, and the National Guard (the navy does not have a national guard). They are subdivided in terms of their organizational structure into organized (formations, units, subunits) and unorganized (individual) reserves. Their total strength is about 2.5 million persons. The reserves are organic components of the branches of armed forces, they are subordinated to the appropriate department, and they are maintained entirely on the basis of the national (federal) budget.

The National Guard is represented by militia troops present in each state, in the Federal District of Columbia, and Puerto Rico. In peacetime, National Guard units and subunits are subordinated to state governors and are financed on the basis of both the national budget and the state budgets. National Guard units and formations are the first line of the organized ready reserves, and they are immediately placed at the complete disposal of the commands of the ground troops and air force when mobilization is declared or when an emergency situation arises.\*

Since the middle of 1973 the armed forces have been manned voluntarily. Contracts are signed for basically not less than 4 years. Lengthy terms of service are promoting professionalization of the armed forces, weakening of the ties of servicemen with the working strata of the population, and their isolation from society, thus strengthening the barriers in the way of penetration of progressive ideas into the barracks.

The total strength of the armed forces, the foreign press reports, has been kept at 3 million persons in recent years; of these, more than 2 million are in the regular troops and about 800,000 are in the organized reserves.

Consequently the development and structure of the sizeable armed forces of the USA are in keeping with their purpose--defending the interests of American imperialism in regions of the world "vitally important" to it. Major troop groupings and naval forces deployed in different areas of the globe several thousand kilometers from the USA attest not to their "defensive" purpose, as the American military-political leadership attempts to portray them, but on the contrary to preparations being made by the USA and its allies to unleash a war against the Soviet Union and other countries of the socialist fraternity, and to suppress the national liberation movement in other countries of the world.

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\*For greater detail, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE No 7, 1978, pp 7-11--*Editor*.

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## PENCIL:IONS, VIEWS, COMMENTS

### COMMENTS ON 'ULTRA-RIGHTISTS' IN U.S. ARMED FORCES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 14-19

[Article by Captain 1st Rank (Reserve) T. Belashchenko]

[Text] Anti-Soviet hysteria and bare-faced anticommunism are perhaps more widespread today than ever before. Using the completely false myth of a "Soviet military threat" as their principal anti-Soviet slogan, imperialist circles are dragging the world back to the times of the cold war, they are bringing forth plans for armed aggression against peace-loving peoples, and in some regions of the world they are creating a situation harboring the most dangerous consequences.

The leaders of the American military-industrial complex, ultra-right politicians, and the heads of militant parties and unions, racist and fascist organizations, and groupings of warring Zionists are marching in the first ranks of those who seek to worsen Soviet-American relations and stir up military psychosis.

The most massive pogrom organization in the USA today is the racist Ku-Klux-Klan (KKK), with official representatives in 22 states. According to TIME, in recent years the strength of this militarized association of double-dyed racists, who actively oppose not only the black equal rights movement but also all progressive forces in the USA, increased by almost 25 percent in the last year and a half. By the end of 1979 just the fighting detachments of the KKK, which conducted operations against representatives of progressive organizations, held cultive "cross-burning ceremonies to frighten Blacks and their protectors", and led reprisals against "dissidents" going as far as murders, bombings, arson, and so on, contained up to 10,000 persons. During 1979 KKK members made more than 40 armed attacks on warriors against racism, participants of meetings and demonstrations, and the enemies of the USA's growing militarism. In May 1980 they took a most active part, together with police and National Guard troops, in savage reprisals against participants of the antiracist demonstration in Miami (Florida), during which more than 20 blacks were killed, more than 350 were wounded and maimed, and about 1,000 were thrown into prison. Similar slaughters occurred earlier in the black ghettos of Los Angeles, Chicago, Detroit, and dozens of cities in the southern states (Selma, Montgomery, Little Rock, and others), where the KKK is especially strong.



American statistics note "a significant trend of decreasing age of the Ku-Klux-Klan membership" in recent years. Almost half of the active members are men 20-30 years old--that is, that portion of the population supplying most of the individuals for the armed forces.

The KKK maintains strong ties with ultra-reactionary militants in extremely chauvinistic associations, such as the notorious "John Birch Society", the paramilitary "Minutemen", and others, the programs of which are based on militant anti-communism hidden beneath super-patriotic slogans and appeals to "save America" and "protect Western civilization". The activities of such organizations are directed and monitored in the USA by the "Committee for Existing Danger", which enjoys considerable rights and possibilities. It contains the top politicians, public figures, businessmen, and reserve generals and admirals holding extremely reactionary viewpoints. Especially active in this coalition are Senator H. Jackson, the butcher of the Vietnamese people General W. Westmoreland, and Admiral (Reserve) E. Zumwalt, who take every advantage to publicize the delirious ideas of anticommunism in their statements.

The first ranks of the enemies of liberty and democracy also contain the heads of avowed fascist organizations, the activities of which, highly placed American leaders have often declared, do not at all contradict either the U.S. Constitution or the laws and traditions of this state. Today as in the past, such extreme reactionary groupings as the "American Nazi Party of White Citizens", the fascist "White Power" union, and other Nazi successors legally exist in the USA, conduct misanthropic fascist propaganda, organize all sorts of rallies, and perform armed attacks against progressive organizations. Although these organizations do not have a mass following today and they are not active in all states, their numbers have been growing constantly in recent years, and their activities have been growing more intense.

Fascist organizations in the USA have their own press organs officially sanctioned by government authorities--in particularly the pogrom newspaper "White Power" and other publications with swastikas embellishing their covers, and their pages filled with malicious slander against democratic forces and with anticommunist fabrications and insinuations. This rabble is allowed to run free in "American democracy". Local fascist party organizations in New York, Chicago, Detroit, and other cities regularly organize demonstrations and meetings, their members take to the streets in the uniform of Nazi stormtrooper detachments, with swastikas on their shirt sleeves, posters, and flags. All of these cut-throats are well armed, they undergo special training, and in their collisions with indignant citizens they immediately resort to the use of not only brass-knuckles, chains, and knives, but also firearms.

U.S. Zionist organizations and their paramilitary formations--the "Jewish Defense League", "B'nai Brith" detachments, and others--are operating on an extensive scale in the northeastern states as well as in cities such as Washington, New York, Philadelphia, Boston, Detroit, and others. They are generously financed by the

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Minutemen was the name given in America's War of Independence (1776-1783) to armed detachments that fought Great Britain's colonial army by methods containing some elements of partisan warfare.

leading monopolies and banks, especially ones in the military-industrial complex. Zionist lobbies actively influence the government, the leadership of the main bourgeois parties, legislative organs, the Pentagon, and the press. Using their own armed bands, these organizations systematically organize provocations against diplomatic and trade representatives of the Soviet Union, other countries of the socialist fraternity, and some developing states.

Interaction among ultra-right organizations has clearly grown more intense in the USA in recent years, especially on the basis of the struggle against progressive forces in America, malicious anti-Soviet propaganda, and intimidation of the people by the myth of a "Soviet military threat". It stands to reason that this growing unity in no way weakens the deep contradictions, the savage struggle, and the mutual hatred that have always been inherent to ultra-right forces, and which often lead to serious conflicts between them. As an example the press has reported several major fights between armed Zionist formations and members of the "American Nazi Party of White Citizens" prophesying antisemitism. An unprecedented incident occurred in August 1979, when the heads of the "Jewish Defense League" and Zionist militants from the "B'nai Brith" declared their unshakeable resolve to fight against the Ku-Klux-Klan, demanding "careful and complete investigation of its growing activity in the armed forces, and implementation of the necessary measures, to include prohibiting regular military servicemen from joining the KKK."

Such political vagaries of the leaders of ultra-right organizations are purely demagogical, to some extent they are even publicity-seeking devices, and they are intended mainly to deceive public opinion. After all, whenever the discussion turns to fighting progressive forces, democracy, and peace, all of their disagreements drop to the background.

The unusually high activity of ultra-right organizations in the armed forces and in the military barracks is typical of the USA today. This is promoted to a decisive degree by the general antipopular nature of bourgeois society, the aggressive purpose of the armed forces, the anti-Soviet, anticommunist predisposition of the entire system of military development in the USA, which is growing from one year to the next, and the nature of the training and ideological processing of the personnel.

This atmosphere of anti-Soviet hysteria, militant psychosis, and merciless suppression of all political dissension in the barracks creates a specially favorable situation for the activities of ultra-right elements, all sorts of "super-patriots", and Black Four-Hundred loud-mouths and assassins who, under the cover of "the fight against the Red threat", deal mercilessly not only with the champions of detente and with those who demand true civil rights for all Americans, but also with sober-thinking people, with all who dare to doubt the correctness of the actions of the White House, monopolies, and the military.

Highly indicative in this regard is an article published in the military-religious journal MILITARY CHAPLAIN, in which the following answer is given to the question as to how to recognize a Red: "Remember that anyone who demands expansion of trade and cultural contacts with communists is a Red, or at least deep pink. We will not stand on ceremony with such as these."

Numerous activists of the militant "John Birch Society", Minutemen, and members of other ultra-right organizations are now waging an anti-communist propaganda campaign in the U.S. Armed Forces. With the awareness and even the full support of the command, they are creating "anticommunism schools" in the units and formations, they are organizing conferences for the development of a "strategy of survival" (their favorite

slogan is "better dead than Red"), they organize so-called "freedom forums" and "hate seminars", and they broadly publicize all sorts of "human rights in Soviet Russia" weeks, "Vietnam refugee support" months, and other similar measures.

As an example the press has reported activities by "John Birch Society" cells in a number of units and formations of the U.S. ground troops, particularly in the 25th Infantry Division deployed in the Hawaiian Islands. A few years ago the commander of this division, Major General E. Walker, boasted of his personal ties with John Birchers, inviting some of them to speak to the soldiers and officers in the division's "school of militant anticommunism". The general's unpardonable frankness cost him his position. However, even after his retirement the "school" he had created continued its activities, and the system of material incentive he had introduced can still be found in some subunits. Soldiers providing "the best responses in the spirit of anticommunism" in weekly lessons at so-called "commander's briefings" receive from \$5 to \$10 (an example of direct ideological processing of the personnel).

Members of the fascist "American Nazi Party of White Citizens" increased their activities in the armed forces in recent years. The military newspaper STARS AND STRIPES, in particular, wrote that Nazi party cells are operating in some divisions, new members are being recruited, and fascist literature is being disseminated among enlisted men and officers. In most military libraries, in the most prominent place, one can invariably find, together with various "popular works" on anticommunism published in large numbers in the USA, the books "The Life and Death of A. Hitler", "Adolph Hitler", "Hitler's War", "The Rise and Fall of the Third Reich", and others. In their research efforts, if we can call them that, the authors do everything they can to try to rehabilitate Hitler and Nazism, and the entire Nazi-created monstrous machine of violence and annihilation. Another fact that speaks for itself is that every major military library in the USA mandatorily possesses an English-language copy of the delirious work by the mad Führer "Mein Kampf", and the memoirs of his accomplices and many Nazi generals and admirals.

American fascist enlisted men, NCO's, and officers in troops deployed on FRG territory operate especially freely. It is easy here for party functionaries to establish contacts with West German neo-Nazis, receive literature and other materials from them, and conduct joint functions. The American newspaper OVERSEAS WEEKLY, reporting the activities of "American Nazi Party of White Citizens" cells in subunits and units of the U.S. Armed Forces in the FRG, stated that they devote much attention to studying Hitler's "Mein Kampf" and other works by Nazi leaders, as well as postwar publications devoted to German fascism. One of the leaders of the fascist party in the American troops in Europe, Sergeant Pace, even boasted that his confederates were able to conduct a secret congress.

The command is well aware of all of this. But it prefers to give the appearance that the activities of fascists in the army offer no danger. Taking advantage of this, fascist thugs among the enlisted men, NCO's, and officers wear Nazi party emblems on their uniforms and display Nazi flags, posters, and insignias in their quarters. In October 1978 the newspaper INTERNATIONAL HERALD TRIBUNE reported that during a changing of the guard at an American air base in the FRG, Rhine-Mainz, the officers, rather than exchanging the customary courtesies, permitted themselves to "exchange a Nazi salute". And all the unit commander did was to rebuke these fascist thugs gently for their "inappropriate joke".



In July 1979 the military newspaper NAVY TIMES wrote that at the U.S. Marine Corps training center in Quantico (Virginia), Major (Siekum) created a "memorial museum" devoted to fascist propaganda in the basement of his home. In the major's words, collecting fascist regalia was his "long-standing heart's desire". The "museum" collection consists of numerous Nazi emblems, orders, uniforms, and cold and infantry weapons of the German Wehrmacht, and even a medium machinegun which had supposedly "been to the Eastern Front". This convinced Nazi regularly convenes confederates from among the officers of the garrison at his home, where they preach misanthropic ideas. And what is most surprising is that an official Pentagon organ sees nothing reprehensible about this, believing the actions of Major Siekum to be those of an ordinary collector, that it is simply his hobby. All the more so because in the USA, and in the armed forces as well, there are many such people who are not embarrassed to declare that during World War II their country "fought the wrong side", and that the time has supposedly come to correct past mistakes by unleashing a war "against the communists".

The constantly growing clamor of militarism and anti-sovietism in the country and the growing struggle of rightists against all progressive forces create an extremely favorable environment in the USA for the spread of the influence of extremists of all persuasions. It is mainly on this soil that not only overt and covert fascists but also members of other pogrom organizations have now achieved such great scope in the American barracks. The scope of the Ku-Klux-Klan's influence has especially grown. Its activities have acquired much greater dimensions, going beyond racial discrimination against Blacks and other nonwhite soldiers and seamen.

As an example in March 1979 the NAVY TIMES reported ... incident that was unprecedented even to world-wide military barracks--a "cross-burning ceremony to strike terror in blacks," performed by a KKK organization right aboard a warship. According to the newspaper a rally was attended by seamen and NCO's of the crew of the carrier "America", dressed in the traditional garments of this racist union, followed by the ritual ceremony on the carrier's deck while standing at the naval base in Norfolk. "The ceremony," the newspaper stated, "was in the best traditions of the KKK. It was attended not only by members of the ship's KKK cell but also by representatives of the local KKK chapter who stole aboard in secret." As is the common practice in this terrorist organization, following the "cross-burning" a hunt was organized aboard ship for persons active in movements against racism, during which Seaman Randel was savagely beaten and then cast under the wheels of a moving railroad hoisting crane. The command of the ship and the base exerted all effort to cover up this monstrous incident, and when it was unable to do so, it limited itself to transferring the most active Ku-Klux-Klanmen to other ships. Such racist sabbaths are not at all a rarity in the U.S. Armed Forces.

Naturally, the command is aware of all of this. From time to time it even publishes stern circulars concerning the fight against racist activities, and particularly against the KKK. In November 1979 Chief of Naval Operations Admiral Hayward sent a special circular on this issue to all naval and marine formation commanders. It prescribed "prohibition, aboard ships and in units, of meetings and other KKK functions, the recruitment of servicemen into this organization, and dissemination of its publications." Decisions that were outwardly just as stern were also made many times by other armed forces executives. But judging from foreign press reports, they do not produce a tangible result. Moreover it can be no other way, when in that same letter Admiral Hayward followed his statements concerning countermeasures against the KKK took special pains to qualify the KKK's legal nature and emphasize



that it "is not in conflict with the constitution". Therefore, the admiral stated, all seamen and officers have the right to attend KKK functions outside the limits of the unit and base, but that it would be desirable for such persons to wear civilian clothing while doing so.

Also important is the fact that both the American press and official documents of the Defense Department often emphasize that "in questions of racial policy, the actions of servicemen reflect the general situation in the country, especially in the southern states, where racial segregation is supported by existing laws."

Racism enjoys strong positions in "democratic" America, and it is an inseparable part of "the American way of life"; its influence in the armed forces is constantly growing. In one of its issues the newspaper *STAR AND STRIPES* published a strange interview with KKK Grand Dragon Shelton. In this interview the ultra-racist openly announced that "our klan has numerous organizations in the armed forces, and not just in the country, but also abroad, in the FRG for example."

KKK organizations conduct extensive activities in garrisons and units, and aboard ships. According to figures cited by Senator E. Chambers, who investigated their actions in the armed forces, more than 220 armed actions were committed against black soldiers, including several attempts at mob law--"lynch parties," between 1973 and 1977 just at the marine base at Camp Pendleton (California) alone. Owing to connivance of the base commander, Major General Hoffman, a number of new KKK cells have been organized in the garrison in recent years, several dozen new members have been recruited, and weapons caches have been created. The senator was even able to interview some of the active KKK members who did not conceal their membership in the group. One of them, Sergeant (Klouz), declared: "Hunting blacks is the same as fighting Reds--this is real American patriotism. Our armed forces are the institution in which we can openly and productively persecute and suppress Negroes and all who place them under their protection."

Zionist organizations are also growing stronger in the armed forces. This activity is being promoted to no small extent by military clergy--by Jewish chaplains who disseminate Zionist propaganda not only among Jewish servicemen but also among all personnel, the families of the enlisted men and officers, and the civilian public. The chaplains have established firm contacts with the "Jewish Defense League", the "National Council of Jewish Congregations", and other organizations enjoying sizeable financial backing and gaining broad acceptance in the military barracks.

The growing influence of reaction upon all areas of life and its attempts at preventing progressive forces from initiating a broad fight against the growth of militarism and against the antipopular domestic and foreign policy of the ruling circles is a phenomenon extremely typical of the United States and the entire imperialist camp. Of course the fascists, Nazis, Ku-Klux-Klanmen, John Birchers, and other scum do not represent the face of the American people, but they do enjoy significant support from the military-industrial complex and from reactionaries of all persuasions, organizing pogroms and provocations against progressive forces and against the national liberation movement. Frightened by the growing influence of democratic forces, and standing in fear of their progress, American reaction is arming itself with the dirtiest tactics, making use of malicious terrorist organizations. Hypocritically pointing out violations of human rights in other countries, American imperialist circles are trying to suppress democracy at home at all costs.

In their effort, they place high hopes on ultra-right forces, which are raising their heads ever higher in the country as a whole, and in the armed forces.

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## PERCEPTIONS, VIEWS, COMMENTS

### U.S. CIVIL DEFENSE REORGANIZATION

MOSCOW ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 23-24

(Article by Lieutenant Colonel V. Goncharov)

[Text] The military-political leadership of the USA is increasing its attention to the problem of civil defense and to the growth in its role in the overall system of militant preparations. One of the recent important directions in the development of U.S. civil defense is improvement of its organizational structure and management with the purpose of raising its effectiveness both in a nuclear missile war and in disaster control.

According to foreign press reports, in accordance with the plan for reorganizing central civil defense organs, by the beginning of 1980 the USA basically completed its efforts to create a single federal administration dealing with emergency situations--FEMA (Federal Emergency Management Agency). This agency is responsible for preparing and implementing civil defense measures on a countrywide scale, and it is subordinated to the U.S. President.\*

Before FEMA was created, the principal organ directing the activities of federal departments and agencies, state governments, and local authorities in civil defense was the Office of Civil Preparedness (OCP), which was within the composition of the Department of Defense. The Federal Preparedness Administration (FPA) and the Federal Office of Emergency Preparedness (FOEP) also participated in some civil defense programs. These three organs made up the basis of the Federal Emergency Management Agency.

In addition to these, the Department of Commerce's fire safety administration and the Department of Housing and Urban Development's federal insurance administration, which pays compensation for disaster losses, were also included in the composition of FEMA.

As a result of unification of all of the federal agencies named above, practically all problems associated with the protection and survival of the country's population in the event of an armed conflict involving the use of mass destruction weapons

\*For more information on the U.S. civil defense system and the reorganization of its central organs, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 7, 1976, pages 94-102, and No 9, 1979, pages 77-78--Editor.

on a broad scale, as well as in the event of various natural disasters, production mishaps, and crashes, are now within the responsibility of FEMA.

Organizationally, FEMA consists of four basic administrations: planning and preparedness (created out of the OCP and FPA), disaster control (created out of the FORDP), fire safety (fully within the composition of the National Fire Safety Administration), and insurance (based in particular on the federal insurance administration). There are also 10 departments serving the civil defense districts. The administration for planning and preparedness, which carries the main responsibility of preparing the civilian sector for actions in a nuclear missile war, occupies premier place. There are plans for creating, in FEMA, a scientific research agency to develop and analyze current and long-range civil defense programs.

The FEMA chief is simultaneously the chairman of the Emergency Action Commission, directly subordinated to the U.S. President. In addition to him, the commission includes the presidential assistants for national security, domestic affairs and policy, and intergovernmental affairs, and the director of Office of Management and the Budget. This commission has the job of helping the president of the country work out a general policy in civil defense with the purpose of raising its effectiveness.

It is noted in the American press that partial changes have occurred in the boundaries of the civil defense districts and in the locations of their headquarters in connection with FEMA's creation. Formerly there were eight of them. In the course of reorganization, a decision was made to divide the country's territory into 10 civil defense districts with their headquarters in the following cities with the goal of making the control system more reliable and implementation of practical measures more effective: Boston (Massachusetts)--district I, New York (New York)--II, Philadelphia (Pennsylvania)--III, Atlanta (Georgia)--IV, Chicago (Illinois)--V, Denton (Texas)--VI, Kansas City (Missouri)--VII, Denver (Colorado)--VIII, San Francisco (California)--IX, and Seattle (Washington)--X (see diagram [not reproduced]).

Underground command posts have been foreseen for wartime use by the administrative agencies of the civil defense districts and by representatives of a number of the most important federal departments and state agencies; as a rule these command posts are located in the same places as the civil defense district headquarters, with the exception of the following districts: I--Maynard (Massachusetts), III--Olney (Maryland), IV--Thomasville (Georgia), and X--Bothell (Washington).

Despite the fact that civil defense functions were taken away from the U.S. Department of Defense, a presidential directive makes it responsible for rendering assistance to the Federal Emergency Management Agency in developing the basic conceptions of civil defense associated with protecting the country's population and economy in a nuclear missile war, and in scientific research and logistical support to emergency rescue operations conducted in peacetime and wartime.

There are also plans for organizing close interaction between FEMA and various state and public organizations in regard to the following issues: predicting and providing information on the consequences of natural disasters--jointly with the National Weather Service; providing medical support and using hospitals in emergency



situations--jointly with the Department of Public Health; providing housing, clothing, food, and medical assistance to victims--jointly with the Red Cross; preparing and restoring the road network--jointly with the Highway Administration; estimating damage to buildings and various structures with the goal of determining the outlays required for their restoration--jointly with the Department of Commerce; protecting the population in the countryside--jointly with the Department of Agriculture.

In the opinion of political commentators in Washington the decision to create the Federal Emergency Management Agency and to place it under the president's jurisdiction signifies nothing more than a new approach by militant circles to assessing the role of civil defense within the entire system of the USA's military preparations for a nuclear missile war.

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## PERCEPTIONS, VIEWS, COMMENTS

### U.S. GROUND FORCES: MOUNTAIN COMBAT OPERATIONS

Москов РАЙОНЕРНОЕ ВОЕННОЕ ОБЩЕСТВО in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 27-31

[Article by Candidate of Military Sciences, Colonel A. Ryzhkov, based on the viewpoints of U.S. military experts]

[Text] The policy of militant circles in the USA, aimed at intensifying the arms race in the country and increasing tension in different corners of the globe, once again confirms in all obviousness that preparation for an aggressive war against the Soviet Union and other socialist countries continues to be the main goal of the United States. For this purpose in addition to supplying its troops with modern combat equipment, the USA is implementing measures on a large scale to improve the organizational structure of the subunits, units, and formations, and the tactics of their combat activities in different types of terrain, to include mountains.

Military experts of the USA emphasize the importance of teaching the personnel to conduct such combat operations, and they note that they must be conducted in accordance with the general principles of modern combined-arms combat, but with a consideration for a number of features having a significant influence on the troops in regard to the organization of offense or defense. They include the extremely rough terrain, the lack of roads and their low traffic capacity, presence of impassable forests, certain difficulties in troop command and control, and dramatic changes in weather. On the other hand mountains, which are a natural obstacle, permit the enemy to dispose his defenses deeply and on numerous lines, in such a way as to permit good fields of view and fire. Therefore the manuals and regulations of the U.S. Army require that commanders and staff account for all of this when organizing combat activities.

In the opinion of the command of the U.S. Army, mountain combat is typified by the operations of conventional infantry subunits, units, and formations, supported by tanks if the terrain allows. Troop fire support is difficult due to presence of dead zones and the difficulty of target observation. Helicopters acquire important significance, since they can be used to transfer personnel and armament, to perform reconnaissance and communication functions, and to land airborne parties with the purposes of seizing passes and tactically important terrain.

A certain degree of decentralization of troop command and control is a unique feature of mountain combat operations. In view of this, commanders must display greater initiative, while staffs must plan their combat operations meticulously in accordance with the concrete conditions of the evolving situation.

Some unique features of troop activities in the mountains will be examined below on the basis of materials from the American military staff.

### The Offensive

The basic premises applicable to the offensive in conventional conditions retain their importance in relation to the mountain offensive. But, as was noted above, there are a number of unique features depending on terrain and on the specifics of the enemy's organization for defense. Owing to this, an offensive would best be waged along roads and valleys, and on the slopes of mountain ranges, and not in gorges and defiles, which restrict maneuver and hinder troop movement. Advancing troops concentrate their main efforts on gaining control of the principal objectives--commanding heights, passes, and so on. Preference should be shown in such missions to enveloping enemy troops and striking them in the flank or rear.

A frontal offensive is recommended when it is impossible to circumvent the flanks of defending troops. It is conducted at night, and without artillery preparation. If detour routes are absent and high losses are anticipated in a frontal offensive, troops could be dropped by helicopter on hills above the defending troops or in their rear, so as to create an advantageous relative strength in men and equipment in places of contact with the enemy with the goal of defeating him.

Designating the attack line in direct proximity to the forming-up place for the offensive, which itself is selected as close as possible to the forward edge of enemy defense, is recommended. To achieve surprise, the forming-up place would best be occupied covertly (at night, in fog, or under the cover of a smoke screen).

Groupings making the main and supporting thrusts and reserves intended to exploit the offensive are created.

The recommendation of the official regulations is to make the main thrust in a direction where the terrain is most favorable to a flanking maneuver, where the best possibilities for using fire weapons exist and, finally, where the most important objectives are located, the capture of which would have important significance to the mission.

According to foreign press reports the order of battle of subunits, units, and formations conducting a mountain offensive may be organized into one or two echelons. American manuals note that the choice depends on the nature of the terrain, the situation, and the mission. Thus an infantry division with two directions of advance available to it organizes its order of battle into two echelons, and when three directions are available, one echelon is formed.

These conditions also have an immediate influence on the depth of the objectives of the advancing troops. However, special attention should be turned to evaluating the status of enemy defenses, to presence of friendly forces and equipment, and to the nature of the terrain in the direction of advance. As an example a division might have the immediate objective of defeating units of the enemy's assault echelon and capturing passes and other important objectives creating advantageous conditions for further actions, while a brigade might have the objective of annihilating manpower and military equipment throughout the depth of an enemy battalion's defensive combat formation.

American manuals emphasize that the unique features of mountain combat operations make a special impression also on the breadth of the zone of advance, which depends on the nature of the terrain and the tasks at hand. As a rule it would be narrower for subunits and units and, on the other hand, wider for formations and major formations than in conventional conditions.

Using tactical airborne units and so-called tactical envelopment groups is recommended as a means for supporting the combat activities of advancing troops. Such units capture important pieces of terrain in the direction of advance, command posts, communication centers, nuclear weapons, artillery, and enemy supply dumps and bases, and they block the approach of enemy reserves to the front, and withdrawal of troops to the rear. In a number of cases they may strike the rear or the flank of defending troops in order to permit the main forces to advance successfully in the principal directions.

The reserves (back-up echelons) would best be committed to battle to exploit the success of the main forces, after the latter capture advantageous pieces of terrain.

U.S. Army manuals also foresee use of nuclear weapons mainly to annihilate enemy centers of resistance, command posts, and communication centers, to destroy mountain passes, to prevent the approach of enemy reserves, and so on.

Another unique feature of the use of fire weapons is that artillery preparation prior to the attack may begin in different directions at different times. Fire support to the troops during the offensive is usually organized as a rolling barrage. Moreover a sufficient quantity of close-support guns are allocated to strike isolated surviving targets. Artillery and mortars are assigned to units and subunits down to platoon level with the mission of striking targets and objects located in the direction of advance of such units. The enemy's fire weapons are suppressed simultaneously at all of his levels of defense. The densest concentration of fire is recommended against targets in the lower level.

Troop command and control, which exhibits a certain degree of decentralization, is structured on the basis of general principles, except that locating control posts at all levels of command closer to the troops than usual is recommended, since this would insure greater stability of communication with them.

## Defense

Mountain defense is organized depending on the nature of the terrain and the importance of the defended direction. Usually, the subunits, units, or formations occupy defenses along the main directions from which the enemy may advance. In this case the breadth and depth of the defense zone are determined by the nature of the mountain terrain, the objectives of the troops, and the number, importance, and capacity of the directions the enemy's offensive may take.

When defending broad valleys and mountain plateaus, troops may organize their order of battle into two echelons, while in other cases (depending on the number of directions) it may be organized into one or two echelons. When defending important independent directions, organizing three echelons would be permissible as well.



The first defending echelon usually consists of infantry subunits reinforced with artillery, antitank weapons, engineer subunits, and sometimes tanks. Back-up (reserve) echelons consist of tank (motorized infantry) subunits and units that deploy in the probable directions of the enemy's offensive and in places permitting their swift commitment to battle, both for counterattacks and to defend objectives in the rear against strikes by enemy airborne troops.

U.S. Army manuals note that mountain defense is spotty in nature, and that it consists of a system of strongpoints deployed on hilltops. Covering the gaps between them with fire from all weapons, with engineering obstacles both on the front and in depth, and when necessary, with reinforced mobile security groups is recommended. Much attention is devoted to protecting terrain favorable to tanks, and to dependably covering approaches to mountain passes, ravines, defiles, and exits from them to valleys and to road junctions in order to make it difficult for the enemy to deploy his troops, and deprive them of the freedom of maneuver.

The forward edge of defense usually extends along the most advantageous natural lines. Battle outposts and general security positions as well as the positions of covering forces are set up in front of it. Covering forces are advanced the maximum possible distance from the forward edge, depending on the terrain, with the objective of establishing contact with the enemy, scouting his positions out, and maximally retarding the advancing troops at the approaches to friendly defensive positions.

When a ravine is to be defended, hills covering the entrance to it are held most tenaciously. The main forces are deployed on the hillside in such a way that they could envelop the ravine. Wide use of ambushes is one of the unique features of mountain defense. Ambushes are set up on those directions where movement of the enemy through concealed approaches, as well as on the flanks of troop combat formations and in the defenses themselves is possible. Population centers and passes deep in the defenses are adapted for ring defense beforehand. Various sorts of obstacles are created in areas where enemy airborne troops may land.

As is emphasized in the foreign press, organization of a deeply disposed system of all forms of fire is the main requirement imposed on mountain defense. Bringing a significant part of the fire weapons of the subunits up to the forward edge and meticulously camouflaging them is recommended. If time allows, permanent weapon positions may be built in valleys, on roads, and along trails.

A large proportion of organic and attached artillery is allocated to troops in the assault echelon defending the most dangerous sectors, and their gun positions are usually set up near roads. Howitzer and mortar fire is used against enemy troops on the back slopes of hills, in ravines, valleys, and other concealed places, and in gaps between strongpoints. If the front slopes of hills are too steep, the depth of the defense zone is increased by locating gun positions on forward-facing lateral ridges. These positions are intended for flanking fire.

Tanks and antitank guided missiles attached to motorized infantry subunits are used in company (platoon) strongpoints defending gorges, forest edges, and mountain river crossings. They assume positions in places from which they could fire at maximum possible range.

Foreign experts believe that the fire plan must be such that a zone of massed multilevel fire of all types would be created in front of the forward edge, on the flanks, and deep into the defenses, and so that fire could be concentrated in short time in any threatened direction or sector. In this case the fire plan is closely coordinated with engineering obstacles.

Much attention is devoted to engineering support. With this purpose natural shelters are adapted as gun positions and as personnel shelters against mass destruction weapons. Stone obstructions are set up at the approaches to strongpoints and on their flanks, while timber obstructions are created in forested mountain terrain; road sections and manmade structures are prepared for demolition, and minefields are laid.

U.S. Army manuals recommend using nuclear and chemical weapons against troops in narrow valleys and on passes, and against objectives which, if destroyed, would cause slides, cave-ins, and avalanches, thus hindering the enemy's maneuver and advance.

Defensive mountain combat must be conducted in order to hold commanding heights, mountain passes, and other important objectives; the success of defensive combat depends in many ways on the initiative and stubbornness of each subunit. Annihilation of the enemy begins at the far approaches, first through the resources of senior chiefs, and then by those of the formation and unit commanders. In this case, strikes are made by aviation and artillery as the enemy's main forces pass through bottlenecks and deploy for attack.

Covering forces and security subunits capitalize on advantageous terrain and prepared positions and obstacles in order to slow down the enemy's advance, using all forms of weapons and attacking from ambushes. The enemy is forced to deploy his main forces, and an attempt is made to steer him into previously prepared zones of fire. The actions of the troops are supported by tactical and army aviation, artillery, and other resources.

As the troops advance to the forward edge, covering and security forces withdraw in battle into their own defenses, and after the last subunits reach the rear of the friendly troops, the assault echelon is committed to battle. Repelling the enemy tank and infantry attack at the forward edge of the front with all fire weapons, including antitank guided missiles and fire support helicopters, as well as by strikes by tactical aviation, is recommended.

On driving a wedge into the defenses, the enemy is subjected to intense fire from the defenders. In this case the subunits must stubbornly hold important commanding heights, mountain passes, and road junctions, even if completely encircled, thus containing the enemy's forces and restricting maneuver of his reserves. Concurrently, reserves are advanced to the threatened sector with the goal of halting the enemy's offensive against the deep defenses, or initiating a counterattack. The latter would best be conducted from top down, along mountain ranges, river channels, and roads. Counterattacks may also be conducted on two or three converging directions with the goal of simultaneously striking both flanks and the rear of the penetrating enemy grouping. In cases where a counterattack by back-up echelons (reserves) does not lead to the recovery of lost ground, and the enemy continues his offensive, troops may switch to holding actions.

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## PERCEPTIONS, VIEWS, COMMENTS

### COMBAT CAPABILITIES OF U.S. F16 FIGHTERS

Moscow **BARUBEZHNOYE VOYENNOYE OBOZRENIYE** in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 47-53

[Article by Engineer-Colonel (Reserve) L. Andreyev]

[Excerpts] Militant circles in countries of the aggressive NATO bloc are continuing to increase the power of their air forces, assigning a number of highly important missions to them, including that of achieving air supremacy. NATO military experts believe in this case that such supremacy may be achieved today, even in a small area and for limited time, only if several methods are used simultaneously. Prominent among these methods is annihilation of enemy aircraft in the air--that is, in aerial combat.

Studying the experience of the USA's aggressive war against Vietnam, and subsequent so-called local wars, in which tactical aviation consisted mainly of multipurpose fighters, and considering the development of armed forces and armament in general, American experts came to the conclusion that airplanes optimized specifically for aerial combat had to be designed (they are often referred to in the foreign press as air supremacy fighters). In order that such a fighter could attack and use its weapons by surprise--that is, before it enters the field of view of the enemy's onboard resources, it must be equipped with complex radar and other onboard equipment, and with weapons of greater range. But this would increase the airplane's weight and worsen its maneuverability, which is so necessary to close aerial combat. But even if this is achieved, it would require considerable outlays, and the airplane would become very complex and expensive. This is what happened, for example, with the American F-15 fighter.

Studying the problem of reequipping fighter aviation, American specialists concluded that it would be suitable to use two types of airplanes simultaneously--the heavy F-15 (take-off weight with four guided missiles--about 19,000 kg) and the light F-16 (take-off weight with two guided missiles--about 10,000 kg).

According to Western press reports the F-16 is already beginning to appear in the air forces of the USA and a number of other countries. In particular by the beginning of 1980 the U.S. Air Force received 74 airplanes, Belgium received 12, and the Netherlands received five. The first F-16's have already been supplied to the air forces of Denmark, Norway, and Israel. In all, 2,000 such airplanes are to be built, to include a majority of single-seater F-16A's and a small number of two-seater F-16B craft.



The American journal AVIATION WEEK AND SPACE PSYCHOLOGY wrote that the F-16A is typified by a high thrust-weight ratio, high maneuverability, effective weapons, dependable onboard equipment supporting automatic control, a good view from the cockpit, and a number of other positive qualities. All of this makes it successful in aerial combat.

The F-16A achieves such a high thrust-weight ratio because of its powerful F100-PW-100 turbofan engine (with a maximum static thrust of 11,340 kg) and its low take-off weight, reduced through the extensive use of lightweight compounds in the structure of its airframe and miniaturization of its electronic equipment. Thus the thrust-weight ratio achieved with an aircraft taking off with a weight of 10,200 kg in flight tests (including 2,670 kg of fuel and two Sidewinder guided missiles suspended from the ends of the wings) was 1.1. This permitted it to accelerate quickly, take off after a run of 360 meters, and climb at a 60° angle. In the words of American pilots, the aircraft can fly vertically soon after taking off. All of this makes it possible for the fighter to use relatively short landing strips and to commit to battle quickly, which is especially important, the Western press emphasized, in the interception of targets that go undetected for a lengthy period of time.

Graphs showing the maximum accelerations, rate of climb, and the acceleration and banking characteristics of the F-16A have been published in the foreign press. These characteristics were recorded while flying with afterburners, with 50 percent fuel remaining, and with two Sidewinder guided missiles. The airplane's take-off weight was 8,550 kg, the unit load on the wings was 306 kg/m<sup>2</sup>, and the thrust-weight ratio was 1.33 which, in the opinion of foreign experts, would permit a fighter to enter into maneuverable aerial combat. Some of these graphs are shown below. In particular Figure 1 shows the limits within which the airplane can maneuver in the vertical and horizontal planes at maximum acceleration, depending on flying altitude and speed. We can see from this graph that maneuvers requiring the highest accelerations can be performed at low and medium altitudes at transonic speed. As an example at an acceleration of 9 G's, it can maneuver within a relatively large range limited by speeds of Mach 0.6-1.2, and altitudes of 0-4,500 meters.

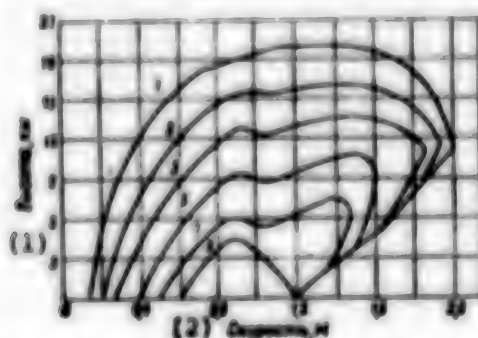


Figure 1. Graph of the Ranges of Maximum Accelerations Depending on the Flying Altitude and Speed of an F-16 Fighter: The curves are drawn for 1, 2, 3, 5, 7, and 9 G)

Key:

1. Height, km
2. Speed, M



Some foreign military experts note that in the examples give above, the crew of the F-16B fighter did not experience much difficulty in winning the aerial battles because they were conducted in simple meteorological conditions against T-38's and F-105's, which have significantly poorer maneuver characteristics. Therefore in their opinion the question as to the combat potentials of an F-16 against enemy airplanes even with similar characteristics remains open.

It was reported in the foreign press that the U.S. Air Force is presently training F-16 pilots in lone and sometimes group aerial combat against more-sophisticated tactical fighters with characteristics supposedly close to those of warplanes of Warsaw Pact air forces. Usually the enemy is represented by F-5E fighters in specially formed squadrons of so-called "aggressors". In most combat, according to the Western press, the F-16 comes out on top. However, some American specialists feel that the F-5E could win if its pilot's training were to be at the same level as that of F-16 pilots.

Studying the experience of flight tests and aerial training combat, American experts revealed the following significant shortcoming in the F-16: its weapon system can be used in combat only in simple meteorological conditions. The reason for this is that the airplane's onboard radar set has a low range, its resistance to interference is poor, and its resolution is low. Because of this, Westinghouse is working on a modernized version of the radar set. In particular a programmable digital processor and a more powerful transmitter are being installed in it. Hughes is remodeling the AN/APG-65 radar set, designed for the F-18, so that it could be used aboard the F-16. The new equipment is to be installed aboard F-16 fighters beginning with the 651st craft. Moreover F-16 fighters will be equipped with medium-range guided missiles (presently undergoing development in the AMRAAM--advanced medium range air-to-air missile--program).

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## PERCEPTIONS, VIEWS, COMMENTS

### NATO EXERCISE 'TACTICAL AIR MEET-80'

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 54-55

[Article by Major A. Pavlov]

[Text] Significant room is devoted in the combat training of tactical aviation of the aggressive NATO bloc to various sorts of exercises in which the combat readiness of the units and subunits is tested, the preparedness of the personnel for their missions is determined, combat tactics are practiced, crews of different nationalities learn to interact, and other problems are worked on. One such function is the competitive exercise "Tactical Air Meet" organized each year by the command of the combined NATO air forces in the Central European theater of war.

It was conducted in 1980 from 20 June to 3 July at Ramstein Air Base (FRG). Crews from fighter, fighter-bomber, and reconnaissance units and subunits of the air forces of the USA, FRG, Great Britain, Belgium, Canada, and the Netherlands, falling within the organization of the 2d and 4th combined tactical air commands of the NATO air forces, and the French Air Force participated in the exercise. In all, 77 warplanes participated in the exercise (for greater detail on the composition of the participants, see the accompanying table [omitted from translation]).

The exercise "Tactical Air Meet-80" was conducted in two stages.

In the first (it was called the tactical stage in the foreign press), the crews flew 12 sorties each, striking simulated and practice targets on the ground. They practiced tactics and methods of weapon use typical of air actions in behalf of the following missions: attainment of air supremacy, isolation of a region of combat activities, close air support to ground troops, and suppression of "enemy" antiaircraft systems. The main objectives of the strikes were airfields, surface-to-air guided missiles, antiaircraft artillery and radar, and concentrations of armored equipment. Practice bombing runs (at low and minimum altitude) and launchings of air-to-surface missiles were conducted at the Baumholder and Sennelager practice ranges. A complex tactical situation was created and electronic countermeasures were extensively employed during the exercise.

The missions were assigned, the sorties were controlled, and the results were evaluated from the operations center of the exercise leader. This was the first time photographs taken by reconnaissance satellites were used in such an exercise to confirm target data (except data acquired by the crews of reconnaissance airplanes). Mixed or, as they are referred to in the Western press, "international" groups were formed for the missions. The group commanders distributed the targets among their flights, designated the tactics, combat formation, weapons, and the methods of their use, and they resolved all other issues associated with the sorties and preparations for them.

Thus a strike group consisting of four flights of four airplanes each was called in to "knock out" an "enemy" airfield: Mirage 5HA tactical fighters of the Belgian Air Forces, CP-104G's from the Canadian Air Force, Mirage 5P's from the French Air Force, and F-104G's from the West German Air Force (listed in the order of their flight). The actions of this group were supported by two West German F-4F's assigned to antiaircraft defense suppression, and by reconnaissance airplanes. In its flight to the target, the group was subjected to 15 simulated attacks by "enemy" fighters, surface-to-air guided missiles, and antiaircraft artillery, as a result of which it "lost" three craft. Prior to the "strike", the reconnaissance airplanes flew a reconnaissance update sortie. The results were transmitted to the group commander. On approaching the target, the crews of the remaining 13 airplanes in the combat formation performed the appropriate maneuvers, reached their assigned objectives, and "struck" them. In particular, first the Canadian crews performed a simulated bombing run (with a pitch-up maneuver) against ammunition and FOT dumps 7 km from the runway; then the French crews struck airplanes in revetments (performing shallow dives), and finally the Belgian and West German pilots struck the runway and the taxiways with delayed-action ammunition (horizontal flight at low altitude).

The attacks were made from different directions at speeds of 890-1,000 km/hr. The raid lasted 90 seconds. Following the "strike" against the airfield, aerial reconnaissance was conducted to determine the results. According to the evaluation made by military experts, the airfield was "knocked out" for 6 hours.

The second stage of the exercise began with a competition in piloting and combat use of weapons. Two teams were formed for this purpose representing the 2d and 4th combined tactical air commands. These teams consisted of two crews each from sub-units of these commands participating in the exercise. Each crew flew two sorties during which it made practice strikes against ground targets (on a practice range), using different weapons and different methods of their use. In particular bombs were dropped from horizontal flight, while diving, and in a pitch-up maneuver, using both conventional bombs and ones supplied with braking devices and accelerators.

The main criteria used to assess the actions of the crews were: accuracy of maintaining the route, accuracy of reaching the target in place and in time, and accuracy of weapon use (bombs, missiles, cannon fire).

Team and individual (crew) prizes were earned in the competition for the best results in combat use of onboard weapons. A separate prize was instituted for the most accurate piloting. Moreover for the first time in such an exercise, ground maintenance crews competed for the shortest turnaround time. Their efforts were evaluated with regard to the complexity of the equipment and the number of weapon mounts on the serviced aircraft.

The crews of reconnaissance subunits participated in air reconnaissance competitions. They flew two sorties each (in one flying day), during each of which the crews reconnoitered three objectives (without repeat runs).

Summarizing the exercise results the command of the combined NATO air forces in the Central European theater of war noted that the combat skills of all crews had improved (in comparison with their performance in previous similar exercises), and the language barrier had been practically overcome (all communication was in English, and it was only in stressful situations that French pilots switched to their native tongue).

In the opinion of NATO specialists the results of the past exercise once again confirmed that American A-10 ground-attack aircraft are sufficiently maneuverable at low altitude, which created sizable difficulties for fighter-interceptors attacking them.

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## PERCEPTIONS, VIEWS, COMMENTS

### NEW U.S. ANTIRADAR MISSILE 'HARM'

MOSCOW *SARBEZHNOYE VOYENNOYE OBOZRENIYE* in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 59-60

[Article by Candidate of Technical Sciences, Engineer-Colonel (Reserve) A. Stepanov]

[Text] In its aggressive aspirations, the military leadership of the USA devotes great attention to raising the fighting power of aviation, which has been given the role of one of the principal resources for annihilating enemy land and sea targets. As the foreign press notes, this mission requires extensive use of aviation's electronic countermeasures, among which foreign military specialists also include antiradar air-to-surface guided missiles, intended to strike ground-based and shipboard radar stations.

American aviation is presently armed with Shrike and Standard ARM's (antiradar missiles), created in the 1960's; in the opinion of American specialists these missiles have a number of shortcomings. In particular they cite their relatively low speed, which lengthens the time a missile is within range of active anti-aircraft resources; insufficient warhead power, not enough to insure a high probability of annihilation of an enemy radar target; absence of passive radar-equipped homing heads capable of sensing a broad range of frequencies, and their insufficient reliability. The Standard ARM, for example, is believed to be complex in design and expensive, and because of its great size it can be carried by only a few aircraft. In the estimate of foreign experts the war experience of Southeast Asia demonstrated that the Shrike missile's range is small, only about 15 km when launched from an altitude of 2,500-3,500 meters, and its warhead is insufficiently effective, its kill radius being only about 15 meters. Its homing head does not provide the required striking accuracy to the missile, and it loses its radar target when the latter ceases emission.

The foreign press reports that since the 1970's, the USA has been pursuing its HARM (high speed antiradar missile) program in order to supplement its arsenal of antiradar guided missiles: It has been working on the new AGM-88A missile, and the aircraft equipment required for its use.

The HARM guided missile is intended to strike not only land-based and shipboard radar systems supporting antiaircraft guided missile weapons and antiaircraft artillery, but also radar supporting early warning, fighter control, and even weather reconnaissance systems. As the developers envision it, it should be more

sophisticated than the existing Shrike and Standard ARM's; in particular it must fly faster to the target, it must have a shorter reaction time, and its more-powerful warhead should have better target kill characteristics. Creation of a single passive radar homing head capable of sensing a broad range of working frequencies is believed to be no less important, since it would make the missile's use against different radar targets possible.

Moreover American specialists are devoting attention to achieving relatively low weight (about 350 kg), and utilizing an improved propulsion system and more-sophisticated resources to protect the missile against the enemy's electronic counter-countermeasures, as well as relatively inexpensive components and systems both within the missile itself and in the onboard equipment of the delivery aircraft.

In terms of its weight and geometric characteristics, the HARM missile occupies an intermediate position between the Shrike and Standard ARM's. According to the Western press its launch weight is 354 kg, it is 4.2 meters long, its wing span is 1.13 meters, and the diameter of the body is 0.25 meters. Its appearance resembles that of the Shrike guided missile, and it has the same aerodynamic design: its body is elongated, terminating at the front with an ogival warhead, a rotating cross-shaped wing, and a tail assembly with a small span. The missile consists of several compartments containing its main parts: the homing head, the warhead, the flight control system, and the propulsion system.

The HARM guided missile is outfitted with one wide-band passive radar homing head. Installation of a stationary antenna system made it possible to dispense with expensive and complex universal suspensions, a target tracking system, and pneumatic and hydraulic systems. The foreign press has reported that a warhead with high lethal power is being developed for the missile. An optical target detector is to be used in its detonation system. The new, more-powerful smokeless solid-fuel rocket engine, which does not give away the aircraft's position at the moment the missile is launched, possesses two thrust modes (boost and sustained), and in the opinion of foreign specialists it should impart higher average speed and greater range to the HARM than that typical of the Shrike and Standard ARM's.

The Pentagon intends to use fighters, ground-attack airplanes, and other aircraft as the delivery vehicles for the HARM missile. However, the approach to the choice of delivery vehicle taken by the U.S. Navy and the U.S. Air Force differs significantly. As was reported in the foreign press, the navy intends to use the missile with aircraft of practically all types, while the air force intends to use only a specialized airplane--the F-4G Wild Weasel tactical fighter.

American specialists are foreseeing several methods of combat use of the AGM-88A HARM antiradar missile. Thus, for example, if the types of radar stations possessed by the enemy and the regions of their deployment are approximately known beforehand, the pilot can use his onboard ELINT set (such as the AN/ALR-45) or his detection receiver (AN/APR-38) to detect and identify emitting objects. Then the missile launch control computer determines the succession of strikes against the targets and transmits to the missile in digital form all of the information necessary for its launch. According to the testimony of the foreign press all of these operations (from detection of an emitting radar target to missile launch) require an extremely short time interval (they are practically instantaneous).

The possibilities for using the HARM against targets of opportunity detected by the pilot while in flight is also being examined. In this case certain operating parameters of the enemy's radar station or its spurious emissions would be detected by the missile's homing head; in the opinion of American experts the high sensitivity of the homing head's target coordinator should support this function. In their estimate the missile's great range would permit its use against previously counted faraway targets as well. For this purpose the trajectories which the missiles would be capable of flying would be calculated beforehand.

Judging from foreign press reports, the first test launches of the HARM were made in 1976 from a deck-landing A-6 attack aircraft, and in spring 1977 from an A-7 aircraft. Following the flight tests and analysis of their results, a decision was made to initiate a full-scale engineering program, which is still in effect today. Series production of the missile is to begin in 1982. In all, the Western press estimates that the U.S. Air Force and U.S. Navy have already spent about \$2.8 billion on the HARM guided missile. They plan to purchase more than 6,000 and 3,000 of these missiles respectively.

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## PERCEPTIONS, VIEWS, COMMENTS

### DEVELOPMENT OF NEW U.S. 'INVISIBLE AIRCRAFT'

Moscow *SARUSHENNOYE VOYENNOYE OBOZRENIYE* in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 61-62

[Article by Engineer-Colonel V. Kirsanov]

[Text] Many readers of our journal have requested information on development of a so-called "invisible airplane" in the USA. Their request is satisfied below.

The Western mass media have recently published a series of materials concerning a U.S. program for development of a so-called "invisible airplane" (it is also often referred to as a "phantom airplane" in the press). In a style typical of bourgeois press, the authors of some articles try to portray this program as something almost "revolutionary" in military aircraft construction, one which would cause a radical change in the appearance of warplanes, significantly improve their tactical and technical characteristics, and permit development of new, highly effective methods for combat application of air forces.

The noisy press campaign began with a Pentagon press conference on 22 August 1980, during which former U.S. Secretary of Defense W. Brown and his under-secretary for research and engineering, communications, command, control, and intelligence, W. Perry announced the new American program. The American defense secretary declared that in the event of successful implementation of the program for developing the "invisible airplane", the USA will be able to create manned and unmanned aircraft which could not be successfully intercepted by the enemy's existing anti-aircraft systems. Perry emphasized in his somewhat more detailed statement that the USA has already been working for a number of years on "penetration methods" which would reduce the effectiveness of land-based radar stations and other detection resources used in anti-aircraft systems. Both speeches emphasized the idea that owing to the new methods being developed in the USA, detection of a flying airplane by means of resources employing the principle of radar or thermal detection would be made significantly more complex, or the possibility for doing so may even be excluded.

Judging from reports in the American press, which was quick to supplement and develop the statements of the top executives of the Pentagon, the main efforts of the United States are focused on the following basic directions: reduction of the geometric dimensions of airplanes with the goal of decreasing the area of the effective reflecting surface; development of aerodynamic form of the fuselage,



wings, and engine air intakes that would scatter signals from enemy radar stations and change their direction; use of materials, traditional to aircraft construction, capable of observing or attenuating radio waves (asbestos-graphite, fiber glass, and rubber coatings, epoxy resins, special paints); use of special heat-insulating materials promoting a decrease in the engine's infrared emissions and use of engine exhaust nozzles of special shape hindering the operation of infrared direction finders.

American specialists believe one of the important directions in this area to be further improvement of existing onboard electronic warfare resources and creation of new, highly effective automated EW resources. In their estimation, the greatest impact could be achieved only with integrated use of all methods presently under development; however, the journal TIME, citing statements by Pentagon officials, noted that even in this case "an airplane would not become fully invisible". It is believed that radar stations and other antiaircraft systems would be able to detect a so-called "invisible bomber", though it would be difficult to determine its coordinates, altitude, and speed precisely, and it may require more time than usual. This would permit the crew to launch a missile or drop its bombs and withdraw from the effective range of antiaircraft systems.

American mass media report that the USA has already been conducting research on individual directions in the "invisible airplane" program for more than 20 years, but it was only when the Carter administration came into power in 1977 that this program was given one of the highest financing priorities. Thus according to W. Perry allocations to this program have been constantly increasing, and now they significantly exceed \$100 million per year.

According to information published in the Western press flight tests of several types of experimental airplanes developed on order from the Pentagon by the leading American aerospace firms have already been going on for 2 years at Nellis Air Force Base (Nevada). In this connection the INTERNATIONAL HERALD TRIBUNE wrote that an experimental airplane produced by Lockheed that participated in the flight tests had such an unusual shape that the latter obviously became the cause of its disastrous end. An experimental airplane produced by Boeing and tested in Nevada was built mainly out of composite materials in the shape of a "flying wing" without a vertical tail assembly. The engines are located in special recesses inside the wing, and they do not protrude outside its outline.

Although the efforts in the program have not yet gone beyond the stage of conceptual research and experimental development, judging from foreign press reports, American specialists are eagerly planning the directions of further development and ascertaining the possibilities for using the obtained results (in particular in application to the design of tactical fighters, reconnaissance airplanes, unmanned resources, and cruise missiles). However, the strategic bomber continues to be an object of special attention for the military-industrial complex of the USA. Thus the newspaper AIR FORCE TIMES wrote that the methods used in designing the "invisible airplane" will be considered in the development of a new bomber intended to replace the B-52. At the same time, assessing the results, the journal FLIGHT asserts in a reactionary article that at the beginning of the next decade SAC will have only an insignificant number of new "invisible airplanes", even if they begin to be delivered to air force units in 1987.

On the whole the program for creating an "invisible airplane" reflects the aspiration of militant circles in the USA to achieve military superiority over the Soviet Union by promoting further growth of the combat capabilities of their armed forces, mainly through qualitative improvements in weapon systems.

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## PERCEPTIONS, VIEWS, COMMENTS

### NATO NAVAL EXERCISE 'TEAM WORK-80'

Moscow **SARUBERNOYE VOYENNOYE OBOZRENIYE** in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 67-71

[Article by Captain 2d Rank V. Khomenskiy]

[Text] In its aggressive preparations aimed mainly against the USSR and other countries of the socialist fraternity, in addition to building and adopting new combat equipment and weapons, the military-political leadership of the North Atlantic bloc is devoting the most serious attention to maintaining the armed forces at a high state of combat readiness, improving their proficiency on the ground, at sea, and in the air, and raising their preparedness for combat activities in all forms of war and armed conflict, employing both conventional weapons and weapons of mass destruction.

Stirring up an atmosphere of military psychosis, and hiding behind false fabrications of a "Soviet threat", the NATO command is conducting intensive operational and combat training, constantly increasing its "naval presence" in different regions of the globe, including the Norwegian Sea.

The Western press notes that the bloc's ruling circles "are troubled by the status of the armed forces grouping on the northern flanks and by its capability for defending NATO interests." They do not conceal the fact that fulfillment of the missions of the armed forces in this region of Europe will depend primarily on prompt arrival of reinforcements from other West European theaters of war or from the American continent, and on their full support with all forms of supplies.

This is why the Norwegian government decided, in response to pressure from the command of the bloc's armed forces, to stockpile combat equipment and weapons on its territory for an expeditionary brigade of U.S. Marines. NATO specialists emphasized that this would make it possible to airlift American infantry together with light armament in short time.

According to the foreign press the transfer of reinforcements to Europe and deployment of American and Canadian warships in the East Atlantic are important components of the plans for combat preparation of the combined armed forces of NATO in the Atlantic, within the zone of the English Channel, and in Europe.

It was precisely to resolve these issues that an exercise code-named "Team Work-80" was conducted by NATO combined armed forces from 10 to 24 September 1980 as part of the bloc's fall maneuvers "Autumn Forge-80".

The exercise area embraced the northern part of the Atlantic, the English Channel, the North Sea, the western part of the Baltic straits, the northern regions of Great Britain, and the territory of Norway.

Judging from foreign press reports the main objective of the exercise was to test out the viewpoints of the NATO command on conducting offensive and defensive operations, to work out the plans for using marine infantry as strategic reserve units to reinforce and support forward groupings of ground troops, to organize military shipping in support of armed forces in the North Europe theater of war, and to resolve the problems of coordination between ground troops, naval forces, and air forces in the initial period of a limited war in which nuclear weapons are not used.

The following basic missions were executed in the course of the exercise: conversion of the bloc's combine armed forces from peacetime to wartime status in accordance with NATO's existing warning system; formation of operational formations and groups for different purposes, to include a NATO strike fleet in the Atlantic; reinforcement of ground troop groupings in southern Norway by landing marines on an unprepared coast; protection of ocean and sea lines of communication used to delivery strategic reserves and military freight to Europe; air support to ground troops operating in maritime sectors, and airborne assaults in conjunction with offensive and defensive actions by the ground troops; action against surface ship groupings and submarines with the objective of achieving supremacy at sea; establishment of blockades in the zone of the Baltic straits on the North Sea side; organization of all forms of defense (antiaircraft, antisubmarine, antimissile, antiship missile, and antimine-laying) of ship formations, assault landing detachments, and convoys during sea crossings; protection of petroleum-gas complexes in the Norwegian and North seas; organization of command and control, communication, reconnaissance, and material-technical supply of ships at sea; resolution of electronic warfare problems.

Special attention was devoted to combat use of the latest models of weapons and equipment carried by surface ships, submarines, and naval aviation, to improving the tactics of military actions at sea, and to studying the influence of the combat capabilities of new classes of ships (to include general-purpose assault landing ships of the "Tarawa" class) and armament systems on the effectiveness of the use of ship formations and the navy as a whole in different operations at sea.

The participants of the exercise included the commands and staffs of combined and national armed forces stationed in the Atlantic, in Europe, and in the English Channel zone, about 60,000 men, more than 170 warships (to include the American atomic multipurpose aircraft carrier "Chester W. Nimitz", the assault helicopter carrier "Iwo Jima", the general-purpose landing ship "Saipan", and the English assault helicopter carrier "Bulwark"), NATO's permanent major naval formation in the Atlantic, a formation of minesweeping forces in the English Channel, more than 400 airplanes and helicopters representing the armed forces of the USA, Great Britain, Canada, the FRG, Norway, Belgium, Denmark, the Netherlands, Portugal, and France,



the 4th (USA) and 3d (Great Britain) marine brigades, and amphibious groups of the Dutch Navy, individual units and subunits of the Norwegian ground troops and national guard, and the men and equipment of NATO's combined air defense system in Europe.

The exercise plan, which was based, judging from reports in the Western press, on one of the provocative variants of an armed conflict on the bloc's northern flank, called for practicing combat activities in the course of a limited war between "Blue" (the NATO combined armed forces) and "Orange" (the "enemy") on the territory of Norway and in the waters of the Northeast Atlantic, employing conventional weapons. In this case the war was said to be started by "Orange", which began advancing its ground troops to the Norwegian border in August under the guise of an exercise and, utilizing the Baltic straits, began deploying its navy in the North Sea and the Northeast Atlantic. "Orange" mass media were organized for an active propaganda campaign intended to undermine the unity of the bloc and separate Norway from NATO. Diversionary acts and organized sabotage occurred on the territory of "Blue" countries.

The military-political leadership of "Blue", estimating the evolving situation as a threat, decided to reinforce its armed forces grouping on the northern flank by transferring marine subunits and tactical aircraft, and by deploying carrier, amphibious landing, and antisubmarine forces from the West Atlantic and other European theaters of war.

Attempting to anticipate the growth in strength of "Blue" groupings, "Orange" initiated combat activities on land and at sea, conducted an offensive operation in central Norway, and began systematic actions aimed at interdicting marine lines of communication in the Norwegian and North seas.

In retaliation, "Blue" landed a combined landing force in order to reinforce the ground troops in Norway, retarded the advance of "Orange" troops into Norwegian territory, blockaded the Baltic straits, went over to the offensive, and defeated the "enemy" on the land front. Concurrently a number of specific, successive operations were conducted to "annihilate" the "enemy's" surface ship groupings and submarines, and achieve air supremacy in the Norwegian Sea and the English Channel, thus insuring favorable conditions for transferring reinforcements and supplies to Europe.

The exercise proceeded in two stages. It was first preceded by reinforcement of the ship groupings of the NATO navies in the East Atlantic, which was done by transferring part of the American and Canadian forces from other theaters of war. Thus, in the course of the exercise "Joint Effort" in the period from 26 August to 10 September, a major assault landing formation and a multipurpose carrier group of the American navy and a detachment of Canadian warships were transferred from the North American continent to the waters of the Northeast Atlantic. The assault landing formation, which consisted of 15 landing ships and transporters (to include the assault helicopter carrier "Iwo Jima" and the general-purpose landing ship "Saipan"), performed the mission of transferring troops from the strategic reserve across the Atlantic to reinforce ground troops in Europe. The formation was covered by the multipurpose carrier group (the atomic multipurpose aircraft carrier "Chester W. Nimitz" and up to 10 escort ships), which operated in front of the convoy. Antisubmarine defense was provided by close support vessels, including an

atomic submarine that could be sent into threatened sectors, antisubmarine deck-landing aircraft, and shore-based patrol aircraft. Surface-to-air missile complexes and antiaircraft artillery belonging to the carrier and close support vessel security forces, and Tomcat deck-landing fighters, which operated as combat air patrols up to 130 nautical miles from their carrier, provided air defense.

Strikes against "enemy" surface shipping were made by deck-landing Intruder and Corsair attack aircraft using free-flight rockets and bombs.

Problems associated with reconnaissance, control of forces at sea, logistical support of ships on the move, and others were also resolved during the crossing.

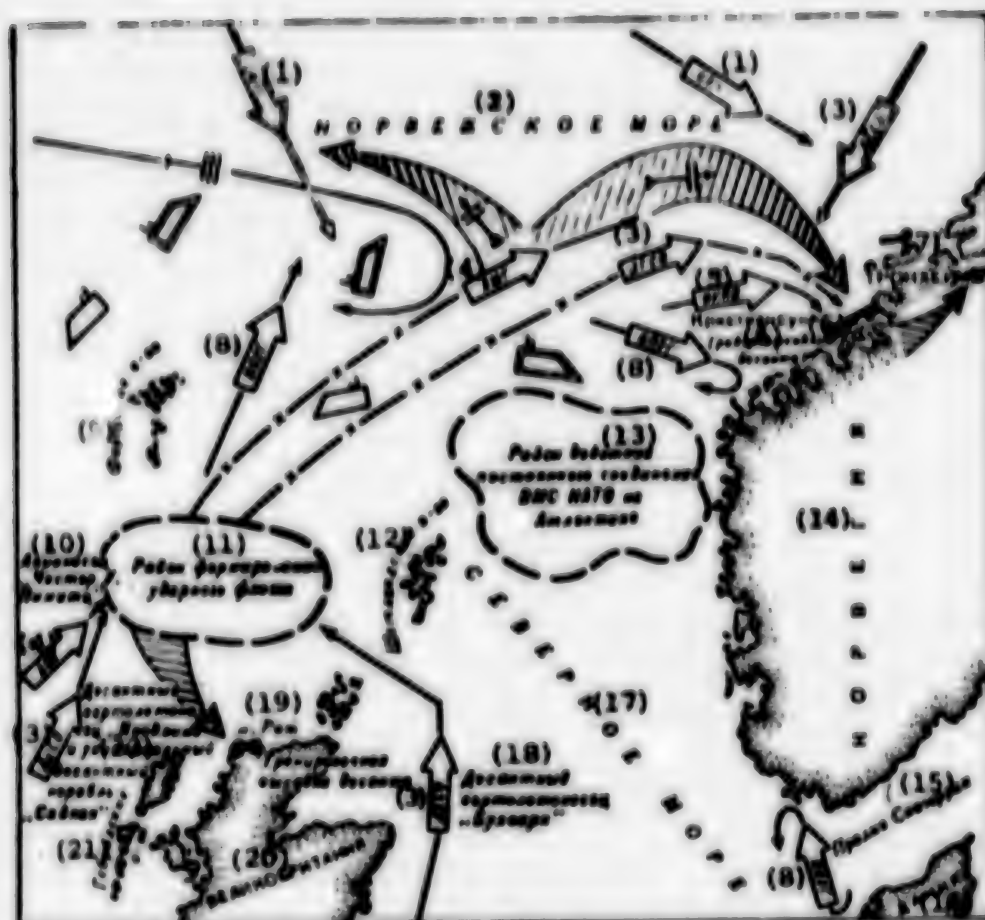
Immediately prior to the exercise marine aircraft were transferred from the continental USA, and transport aircraft airlifted combat equipment and the personnel of airfield maintenance subunits.

The first stage (10-17 September) consisted of the final measures to switch the bloc's combined armed forces from a peacetime to a wartime status, to operationally subordinate them to the NATO command, to deploy forces in the combat regions, and to form formations and groups intended for specific purposes; the landing of a marine assault attachment on the northern coast of Great Britain was practiced. Strike and antisubmarine forces conducted missions to gain superiority in the Norwegian Sea, they fought submarines at antisubmarine lines, and they protected marine lines of communication in the North Sea and in the English Channel.

Warships deployed from naval bases and supply points with anti-mine support from minesweepers and minesweeping helicopters. The main ship groupings of the European NATO countries were deployed in the Norwegian and North seas, in the English Channel, and along the Icelandic antisubmarine line.

On 12 September a NATO strike fleet was formed in the Atlantic north of Great Britain (see figure), consisting of about 50 warships and transporters, to include: a multipurpose carrier group (the atomic carrier "Chester W. Nimitz" and 10 escort vessels), an amphibious landing formation (the assault helicopter carriers "Iwo Jima" and "Bulwark", the general-purpose landing ship "Saipan", and up to 15 landing ships and transporters). After the strike fleet was formed, the amphibious landing formation steamed to the north coast of Great Britain, where in the vicinity of the Cape of Wrath a training assault landing was made on an unprepared coast, employing a combination of helicopters and landing ships. Antisubmarine protection was provided to the landing area from the north by the multipurpose carrier group. Air support was provided to the landing forces by deck-landing airplanes from the aircraft carrier "Chester W. Nimitz", which was stationed 80-150 nautical miles northwest of the Hebrides.

Meanwhile in the Norwegian Sea and along an antisubmarine line extending from Iceland to the Faeroe Islands, maneuverable antisubmarine forces worked closely with the SOSUS long-range sonar observation system to hunt, track, and "kill" "enemy" submarines. The submarines employed a static-maneuverable strategy in regions with 40x40 nautical mile dimensions. Antisubmarine ships were brought together into hunter-killer groups that operated both independently and in coordination with Orion and Nimrod shore-based patrol aircraft. The latter made active use of radio-sonar buoys, gas analyzers, and magnetic detectors.



Deployment of the Forces of the Sides Participating in the "Team Work-80" Exercise in the Norwegian Sea

Key:

- |   |   |
|---|---|
| 1. Warship detachment                       | 12. Shetland Islands  |
| 2. Norwegian Sea                            | 13. Region of operations of NATO's permanent naval formation in the Atlantic        |
| 3. Amphibious landing formation             | 14. Norway  |
| 4. Multipurpose carrier group               | 15. Skagerrak Strait  |
| 5. Fire support vessel detachment           | 16. Denmark   |
| 6. Kristiansund (amphibious landing region) | 17. North Sea   |
| 7. Trondheim                                | 18. Assault helicopter carrier "Bulwark"  |
| 8. Ship hunter-killer group                 | 19. Cape of Wrath, training amphibious landing site                                 |
| 9. Faeroe Islands                           | 20. Great Britain   |
| 10. Aircraft carrier "Chester W. Nimitz"    | 21. Hebrides Islands  |
| 11. Strike fleet formation area             | 22. Assault helicopter carrier "Iwo Jima" and general-purpose landing ship "Saipan" |



Minesweeping forces, including a permanently deployed minesweeping formation in the English Channel, laid training mines and escorted ships and convoys behind minesweepers. As in exercises of previous years, B-52 strategic bombers from the U.S. Air Force supported minelaying operations in remote sea regions.

After the training amphibious landing the combined amphibious landing formation initiated a crossing of the Norwegian Sea with the goal of subsequently landing a marine amphibious detachment on southern Norway. The crossing was accompanied by active operations on the part of "enemy" submarines, surface ships, and aviation. A multipurpose carrier group provided operational cover through the formation, operating in threatened sectors ahead of the convoy. A ship hunter-killer group and a NATO naval formation permanently deployed in the Atlantic provided antisubmarine defense from the south.

The joint efforts of "Blue" managed to contain "Orange" forces in the Norwegian Sea, partially "annihilate" the latter's main ship groupings, and thus insure safe crossing of the amphibious landing formation to the vicinity of Kristiansund (in southern Norway).

The second stage (18-24 September) entailed maintenance of supremacy in the Norwegian Sea, the conduct of an amphibious landing operation, organization of interaction between marine infantry and ground troops in the course of defensive and offensive actions, transfer of reinforcements to the North European theater of war, protection of marine lines of communication in the East Atlantic and the petroleum-gas complexes in the North Sea, convoy escort and all forms of convoy support and support to ground troops and the landing operation.

A combined amphibious landing was made on 18 September in an area southeast of Kristiansund by 10,000 American, English, and Dutch marine infantry. The landing was preceded by air and artillery preparation conducted by carrier aviation, marine aviation, and the ship artillery of a ship fire support detachment, and by minesweeping operations at the approaches to the landing areas. A combined regiment and Norwegian national guard subunits with the strength of up to 8,000 persons defended against the amphibious landing.

The foreign press reports that this was the first time in an exercise of this sort that an amphibious landing operation was conducted at night with the active use of infrared night vision instruments. In the course of the landing and operations ashore, electronic resources were extensively employed to jam the equipment of the defending side.

Air support was provided to the landing forces and ground troops by deck-landing aircraft from the carrier "Chester W. Nimitz", and by marine aircraft transferred to (Erlann) Air Base for the critical period.

With the support of tactical aviation, the combined efforts of marine infantry and ground troops permitted "Blue" to halt the "Orange" offensive, and then, after regrouping its forces, to go over to the offensive in the direction of Trondheim. Simultaneously "Blue" ship groupings conducted combat operations aimed at defeating "Orange" amphibious landing detachments at sea, at the approaches to the Norwegian coast, they blockaded the Baltic strait with the goal of preventing the passage of



surface ships out of the Baltic, and they practiced defense of petroleum-gas facilities in the North Sea using surface ships, tactical aircraft, and helicopters.

On the whole, in the estimation of Western military specialists, the exercise achieved its aim; however, there was mention of accidents that results in the death of personnel, of failure of combat equipment and weapon systems, and of the inadequate skills of the crews of certain ships and airplanes.

The "Team Work-80" exercise, which was conducted in a time of international tension, was clearly provocative in nature, and it had an openly anti-Soviet and antisocialist orientation. It was intended to aggravate the situation in Europe and in all the world even more, to broaden the arms race, and to force military preparations. This is why Soviet soldiers and the soldiers of fraternal socialist countries must alertly monitor the intrigues of NATO ringleaders, and be constantly ready to crush the aggressor, if he dares to transgress the sacred borders of the great achievements of socialism.

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## PERCEPTIONS, VIEWS, COMMENTS

### NATO CAPABILITIES AGAINST ANTISHIP MISSILES

Moscow ZARUBEZHNOYE VOYENNOYE OBOZRENIYE in Russian No 1, Jan 81 (signed to press 12 Jan 81) pp 72-74

[Article by Candidate of Naval Sciences, Associate Professor, Captain 1st Rank V. Vostrov]

[Text] The most important feature in the development of the navies of the leading capitalist countries in the last two decades was broad introduction of missiles into the fleets, including antiship missiles. Owing to their good combat characteristics (range, speed, low-altitude capability, accurate guidance, small reflecting surface, and hence difficult early detection and annihilation), these missiles have been deemed to be among the most promising offensive weapons at sea.

Now that antiship missiles have been supplied to surface ships, boats, atomic submarines, carrier-based airplanes, and shore-based patrol and tactical aviation, the combat capabilities of the navies and air forces in a duel with enemy naval forces have improved noticeably. Concurrently this raised the problem of protecting friendly ships against enemy missiles.

In the opinion of Western military specialists the most effective antimissile defense can be achieved through joint implementation of the following measures: organization of dependable reconnaissance of enemy forces; optimum organization of friendly forces into cruising order and combat formation; early detection and annihilation of airborne missiles; the jamming of the homing heads of antiship missiles; clear coordination between the forces and resources of a ship formation and the permanent air observation system in the region of combat operations; implementation of measures to support covertness and camouflage.

A formation's antimissile defense is conducted in relation to zones and specific objectives, within the framework of a single integrated system of antiaircraft, antisubmarine, and antiship (antiboat) defense measures. It foresees, first of all, action against antiship missile delivery systems and, second, detection and annihilation of the missiles themselves during their flight to the target.

Action against delivery systems is the responsibility of escort ships, submarines, and deck-landing and shore-based patrol and tactical aviation, in coordination with the SOGUS permanent passive long-range sonar observation system and the forces and resources of the theater of war's combined air defense system, the main goal of which is to detect and annihilate antiship missile delivery systems or deprive them of the possibility for using their missiles.

This article, which was written on the basis of foreign press materials, examines certain questions associated with action against antiship missiles on a flight trajectory to a target.

As is noted in the foreign press, action against antiship missiles is organized in zones (far--80-120 km, middle--20-80 km, and near, including the self-defense zone--up to 20 km), and it foresees in-depth utilization of reconnaissance and EW resources, deck-landing airplanes (if there is a carrier in the composition of the ship detachment) and helicopters, and antiaircraft missile and artillery complexes.

In the opinion of NATO military experts, antiaircraft missile complexes are the most effective against antiship missiles in zonal defense. Beyond the effective range of antiaircraft missile complexes, antiship missiles are fought by deck-landing aviation, mainly F-14 Tomcat fighters, each of which can carry up to six Phoenix guided missiles, which can hit antiship missiles on their trajectories.

In the 80-120 km zone, antiship missiles can be intercepted by the Talos (USA) and Sea Dart (Great Britain) antiaircraft missile complexes, the ranges of which are 120 and 80 km respectively.

In the 20-80 km radius antiship missiles are intercepted primarily by Terrier, Tartar, Aegis (USA), Sea Slug (Great Britain), and Masurka (France) antiaircraft missile complexes, and in part by medium-caliber guns (152 and 127 mm). Effective ranges are 40 km for the Terrier, 20 km for the Tartar, 40-50 km for the Aegis, 45 km for the Sea Slug, and 40 km for the Masurka. Judging from Western press reports the Aegis, which has been under development since 1969 and undergoing testing since 1974, is a modern, promising weapon system against antiship missiles within this zone. It must simultaneously intercept up to six targets flying in different directions, with a high kill probability. The complex makes use of Standard-2 RIM-66C antiaircraft guided missiles with a high-explosive fragmentation warhead detonated by a contactless or contact fuse. According to foreign press reports a nuclear warhead is also being developed for the Standard-2 antiaircraft guided missile. In the middle leg of its trajectory, the missile is guided to the target by a radio command system with an inertial reference block. In the final leg it is guided by a semiactive radar homing head exhibiting high resistance to interference.\* The first ship armed with the Aegis antiaircraft missile complex was the guided missile cruiser CG47 (it was formerly classified as a destroyer, and named the DDG47). The plans are to introduce it into the navy's fighting composition in 1983; a total of 16 ships of this class are to be built.

NATO military specialists believe that antiship missiles will most probably be detected in the near zone. They will be struck by the combined force of missiles and artillery: first, the NATO Sea Sparrow antiaircraft missile complex (range, 18 km), developed jointly by the USA, Italy, Denmark, Norway, the Netherlands, and Belgium, the American Sea Sparrow (15 km), the French Crotal (10 km), the Italian Sea Indigo (10 km), and the English Sea Wolf (6 km) and Sea Cat (3.5 km); second,

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\* For greater detail on the Aegis antiaircraft missile complex, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 10, 1978, pp 83-87--Editor.

by medium and small caliber guns (120, 114, 102, 100, 76, 57, 40, 35, 30, and 20 mm).

According to foreign press reports the most effective weapon against antiship missiles in the self-defense zone is the Sea Wolf antiaircraft missile complex (see figure [figure not reproduced]), which can hit antiship missiles flying at a speed up to Mach 2, at both medium and minimum altitude. It is also noted that intense work is being conducted to develop weapons against low-flying targets further. Thus the USA's General Dynamics is working on an order from the commands of the U.S. and FRG navies to develop a close-range antiaircraft missile complex--the ASMD. Its adoption is anticipated in the early 1980's. Great Britain is working on the Sea Fox automatic salvo fire system, and France is working on the (Katyul') system.\*

Antiaircraft artillery is an important supplement to antiaircraft guided missile systems, and in a number of cases it is the principal weapon used by ships with a small displacement against antiship missiles. It is believed that the low probability of missile kill by a single small-caliber projectile is compensated by the fragment screen created through significant consumption of ammunition by rapid-fire guns.

Much attention has been devoted in recent years to antiaircraft artillery in the 20-40 mm caliber range. The firing accuracy of these guns is higher due to the use of improved fire control systems and the high effectiveness against high-speed low-flying targets. The most promising of these is the Vulcan-Phalanx close-range 20 mm artillery system. It can independently seek and detect an airborne enemy, evaluate the threat, lock onto the target, track it, and open fire.

Electronic warfare (EW) resources are believed to be an important component of shipboard antimissile defense systems providing immediate protection against antiship missiles. They include shipboard jamming stations and launchers for free-flight rockets filled with dipole reflectors or infrared (IR) decoys. Free-flight rockets are shot in the direction of an attacking antiship missile, and when they explode, they create a cloud of dipole reflectors or infrared decoys with a large reflection surface that jams the missile's homing head. In recent years the NATO countries have created several passive interference systems, to include the English Protin and Corvus, the French (Dagay), the Italian SCLAR, and the West German (Shalmey) systems.

Protection against antiradar missiles homing onto emissions from a ship's radar station is afforded primarily by changing the operating mode and emission frequency of shipboard radar. Smoke screens and powerful light sources that can "blind" television cameras are believed to be suitable countermeasures against antiship missiles with television homing heads.

The effectiveness of defense against antiship missiles has risen significantly now that ships are supplied with helicopters. As was reported in the foreign press, use of deck-landing helicopters has broadened the zone of enemy observation, and presence of EW resources aboard such helicopters has significantly broadened the range of defensive capabilities of the ship they protect. Moreover, being an air-to-air guided missile carrier, a helicopter can knock down antiship missiles on its own. If it cannot do so, the missile can be brought down by shipboard weapons controlled from the helicopter.

\* For more on these systems, see ZARUBEZHNOYE VOYENNOYE OBOZRENIYE, No 1, 1980, pp 81-84--Editor.

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